

PATENT ATTORNEY DOCKET NO. 07180/004003

Certificate of Mailing: Date of Deposit: May 21, 2003
I hereby certify under 37 C.F.R. § 1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated above and is addressed to the Commissione for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
Moya Kinnealey Printed name of person mailing correspondence Signature of person mailing correspondence

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:

Vassilis I. Zannis et al.

Art Unit:

1636

Serial No.:

09/827,854

Examiner:

Quang Nguyen

Filed:

April 5, 2001

Customer No.:

21559

Title:

COMPOUNDS AND METHODS FOR LOWERING

CHOLESTEROL LEVELS WITHOUT INDUCING

HYPERTRIGYLCERIDEMIA

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

STATEMENT UNDER 37 C.F.R. § 1.825

In reply to the Notice to Comply that was mailed in connection with the above-captioned application on March 21, 2003 and as required by 37 C.F.R. § 1.825(a), enclosed is an amended Sequence Listing consisting of fifteen (15) sheets to replace the Sequence Listing that was present in this application prior to this submission.

The Sequence Listing has been amended to contain SEQ ID NOs: 20-29 from page 21, Table I of the specification, as requested by the Examiner. I hereby submit that the substitute sheets contain no new matter.

As required by 37 C.F.R. § 1.825(b), enclosed is a diskette containing a copy of the Sequence Listing in computer readable form, including all previously submitted data with the amendments incorporated therein. The contents of the computer readable form of the Sequence Listing are the same as the contents of the paper sheets.

If there are any charges or any credits, please apply them to Deposit Account No. 03-2095.

Respectfully submitted,

Date: May 21, 2063

Clark & Elbing LLP 101 Federal Street Boston, MA 02110

Telephone: 617-428-0200 Facsimile: 617-428-7045

\\Clark-w2k1\documents\07180\07180.004003 Sequence Statement.doc

Nicht Henry
Paul T. Clark Vick; L. Healy
Reg. No. 30,162 Reg. No. 48,343

PATENT TRADEMARK OFFICE



SEQUENCE LISTING

RECEIVED

MAY 2 8 200

TECH CENTER 1600/2800

<110> Zannis, Vassilis Kypreos, Kyriakos E.

<120> Compounds and methods for lowering cholesterol levels without inducing hypertriglyceridemia

<130> 07180/004003

<140> US 09/827,854

<141> 2001-04-05

<150> US 09/679,088

<151> 2000-10-04

<150> US 09/544,386

<151> 2000-04-06

<160> 29

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 299

<212> PRT

<213> Homo sapiens

<400> 1

Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu Arg Gln
1 10 15

1 5 10 15 Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu Gly Arg

20 25 30
Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln Val Gln

35 40 45
Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala Leu Met

50 55 60
Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu Glu Glu

65 70 75 80
Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser Lys Glu

Gin Leu Thr Pro Val Ala Giu Giu Thr Arg Ala Arg Leu Ser Lys Giu 85 90 95

Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp Val Arg
100 105 110

Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu Gly Gln
115 120 125

Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg Lys Leu 130 135 140

Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg Leu Ala
145 150 155 160

Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu Ser Ala 165 170 175

165 170 175

Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val Arg Ala
180 185 190

Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg Ala Gln
195 200 205

Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly Ser Arg 210 215 220

<210> 2 <211> 299 <212> PRT <213> Homo sapiens

<400> 2 Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu Arg Gln 1 Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu Glu Glu 70 75 Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser Lys Glu 85 Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp Val Cys 100 105 Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu Gly Gln 120 Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg Lys Leu 135 Arg Lys Arg Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg Leu Ala 150 Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu Ser Ala 165 170 Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val Arg Ala 180 185 Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg Ala Gln 200 Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly Ser Arg 210 215 Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu Val Arg 230 235 Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala Glu Ala 250 Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu Asp Met 265 Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala Val Gly 280 Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His

```
<211> 299
<212> PRT
<213> Homo sapiens
<400> 3
Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu Arg Gln
1
                                    10
Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu Gly Arg
            20
                                25
Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln Val Gln
        35
                            40
                                                45
Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala Leu Met
                        55
Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu Glu Glu
                                        75
                    70
Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser Lys Glu
                85
                                    90
Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp Val Cys
            100
                                105
                                                    110
Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu Gly Gln
        115
                            120
                                                125
Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg Lys Leu
                        135
                                            140
Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Cys Leu Ala
                    150
                                        155
Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu Ser Ala
                165
                                    170
Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val Arg Ala
            180
                                185
Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg Ala Gln
                            200
        195
                                                205
Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly Ser Arg
                        215
                                            220
Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu Val Arg
                                        235
                    230
Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala Glu Ala
                245
                                    250
Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu Asp Met
            260
                                265
Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala Val Gly
                            280
```

<210> 4 <211> 299 <212> PRT <213> Homo sapiens

Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His

```
Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu Glu Glu
                    70
Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser Lys Glu
                85
                                    90
Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp Val Cys
            100
                                105
Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu Asp Gln
                            120
Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg Lys Leu
                        135
Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Cys Leu Ala
                    150
                                        155
Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu Ser Ala
                165
                                    170
Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val Arg Ala
            180
                                185
Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg Ala Gln
                            200
Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly Ser Arg
    210
                        215
Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu Val Arg
                    230
                                        235
Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala Glu Ala
                                    250
Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu Asp Met
                                265
Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala Val Gly
                            280
Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His
    290
                        295
```

<210> 5 <211> 299 <212> PRT

<213> Homo sapiens

<400> 5 Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu Gly Arg 20 Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln Val Gln 40 Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala Leu Met 55 Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu Glu Glu 70 75 Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser Lys Glu 90 Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp Val Cys 105 Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu Gly Gln 120 Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg Lys Leu 135 140 Cys Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg Leu Ala 150 155 Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu Ser Ala

```
165
                                   170
Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val Arg Ala
          180
                               185
Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg Ala Gln
       195
                           200
Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly Ser Arg
                       215
                                            220
Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu Val Arg
                   230
                                        235
Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala Glu Ala
               245
                                   250
Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu Asp Met
                                265
Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala Val Gly
                            280
Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His
                        295
<210> 6
<211> 299
<212> PRT
<213> Homo sapiens
Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu Arg Gln
Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu Gly Arg
                                25
Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln Val Gln
                            40
Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala Leu Met
                       55
```

Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu Glu Glu 75 Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser Lys Glu 90 Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp Val Cys 105 Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu Gly Gln 120 Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg Lys Leu 135 140 Arg Gln Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg Leu Ala 150 Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu Ser Ala 165 170 Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val Arg Ala 180 185 Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg Ala Gln 200 205 Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly Ser Arg 215 220 Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu Val Arg 230 235 Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala Glu Ala 245 250 Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu Asp Met 260 265

```
Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala Val Gly
                           280
       275
Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His
                       295
<210> 7
<211> 1156
<212> DNA
<213> Homo sapiens
<400> 7
cqcaqcqqaq qtqaaqqacq tccttcccca qqaqccqact qqccaatcac aqqcaqqaaq 60
atgaaggttc tgtgggctgc gttgctggtc acattcctgg caggatgcca ggccaaggtg 120
gagcaagcgg tggagacaga gccggagccc gagctgcgcc agcagaccga gtggcagagc 180
ggccagcgct gggaactggc actgggtcgc ttttgggatt acctgcgctg ggtgcagaca 240
ctqtctqaqc aggtgcagga ggagctgctc agctcccagg tcacccagga actgaggqcg 300
ctgatggacg agaccatgaa ggagttgaag gcctacaaat cggaactgga ggaacaactg 360
accocggtgg cggaggagac gcgggcacgg ctgtccaagg agctgcaggc ggcgcaggcc 420
cggctgggcg cggacatgga ggacgtgcgc ggccgcctgg tgcagtaccg cggcgaggtg 480
aagctgcgta agcggctcct ccgcgatgcc gatgacctgc agaagcgcct ggcagtgtac 600
caggeegggg ecegegaggg egeegagege ggeeteageg ecateegega gegeetgggg 660
cccctggtgg aacagggccg cgtgcgggcc gccactgtgg gctccctggc cggccagccg 720
ctacaggage gggcccagge ctggggegag eggctgegeg egeggatgga ggagatggge 780
agcoggacco gcgaccgcct ggacgaggtg aaggagcagg tggcggaggt gcgcgccaag 840
ctggaggagc aggcccagca gatacgcctg caggccgagg ccttccaggc ccgcctcaag 900
agctggttcg agcccctggt ggaagacatg cagcgccagt gggccgggct ggtggagaag 960
qtqcaqqctq ccgtgggcac cagcgccgcc cctgtgccca gcgacaatca ctgaacqccg 1020
aagcctgcag ccatgcgacc ccacgccacc ccgtgcctcc tgcctccgcg cagcctgcag 1080
cgggagaccc tgtccccgcc ccagccgtcc tcctggggtg gaccctagtt taataaagat 1140
tcaccaagtt tcacgc
                                                               1156
<210> 8
<211> 1156
<212> DNA
<213> Homo sapiens
<400> 8
cgcagcggag gtgaaggacg tccttcccca ggagccgact ggccaatcac aggcaggaag 60
atgaaggttc tgtgggctgc gttgctggtc acattcctgg caggatgcca ggccaaggtg 120
gagcaagcgg tggagacaga gccqgagccc gagctgcgcc agcagaccga gtggcagagc 180
ggccagcgct gggaactggc actgggtcgc ttttgggatt acctgcgctg ggtgcagaca 240
ctgtctgagc aggtgcagga ggagctgctc agctcccagg tcacccagga actgagggcg 300
ctgatggacg agaccatgaa ggagttgaag gcctacaaat cggaactgga ggaacaactg 360
accocggtgg cggaggagac gcgggcacgg ctgtccaagg agctgcaggc ggcgcaggcc 420
cggctgggcg cggacatgga ggacgtgtgc ggccgcctgg tgcagtaccg cggcgaggtg 480
aagctgcgta agcggctcct ccgcgatgcc gatgacctgc agaagcgcct ggcagtgtac 600
caggccgggg cccgcgaggg cgccgagcgc ggcctcagcg ccatccgcga gcgcctgggg 660
cccctggtgg aacagggccg cgtgcgggcc gccactgtgg gctccctggc cggccagccg 720
ctacaggage gggcccagge etggggegag eggetgegeg egeggatgga ggagatggge 780
agcoggacco gcgaccgcct ggacgaggtg aaggagcagg tggcggaggt gcgcgccaag 840
ctggaggagc aggcccagca gatacgcctg caggccgagg ccttccaggc ccgcctcaag 900
agctggttcg agcccctggt ggaagacatg cagcgccagt gggccgggct ggtggagaag 960
gtgcaggctg ccgtgggcac cagcgccgcc cctgtgccca gcgacaatca ctgaacgccg 1020
aagcetgeag ceatgegace ceaegceace eegtgeetee tgeeteegeg eageetgeag 1080
cgggagaccc tgtccccgcc ccagccgtcc tcctggggtg gaccctagtt taataaagat 1140
tcaccaagtt tcacgc
                                                               1156
```

```
<210> 9
<211> 1156
<212> DNA
<213> Homo sapiens
<400> 9
cgcagcggag gtgaaggacg tccttcccca ggagccgact ggccaatcac aggcaggaag 60
atgaaggttc tgtgggctgc gttgctggtc acattcctgg caggatgcca ggccaaggtg 120
gagcaagcgg tggagacaga gccggagccc gagctgcgcc agcagaccga gtggcagagc 180
ggccagcgct gggaactggc actgggtcgc ttttgggatt acctgcgctg ggtgcagaca 240
ctgtctgagc aggtgcagga ggagctgctc agctcccagg tcacccagga actgagggcg 300
ctgatggacg agaccatgaa ggagttgaag gcctacaaat cggaactgga ggaacaactg 360
accccggtgg cggaggagac gcgggcacgg ctgtccaagg agctgcaggc ggcgcaggcc 420
eggetgggeg eggacatgga ggacgtgtge ggeegeetgg tgeagtaceg eggegaggtg 480
caggicatge teggecagag cacegaggag etgegggtge geetegeete ceacetgege 540
aagctgcgta agcggctcct ccgcgatgcc gatgacctgc agaagtgcct ggcagtgtac 600
caggccgggg cccgcgaggg cgccgagcgc ggcctcagcg ccatccgcga gcgcctgggg 660
cccctggtgg aacagggccg cgtgcgggcc gccactgtgg gctccctggc cggccagccg 720
ctacaggagc gggcccaggc ctggggcgag cggctgcgcg cgcggatgga ggagatgggc 780
agccggaccc gcgaccgcct ggacgaggtg aaggagcagg tggcggaggt gcgcgccaag 840
ctggaggagc aggcccagca gatacgcctg caggccgagg ccttccaggc ccgcctcaag 900
agctggttcg agcccctggt ggaagacatg cagcgccagt gggccgggct ggtggagaag 960
gtgcaggctg ccgtgggcac cagcgccgcc cctgtgccca gcgacaatca ctgaacgccg 1020
aagcctgcag ccatgcgacc ccacgccacc ccgtgcctcc tgcctccgcg cagcctgcag 1080
cgggagaccc tgtccccgcc ccagccgtcc tcctggggtg gaccctagtt taataaagat 1140
tcaccaagtt tcacgc
                                                                 1156
<210> 10
<211> 1156
<212> DNA
<213> Homo sapiens
<400> 10
cgcagcggag gtgaaggacg tccttcccca ggagccgact ggccaatcac aggcaggaag 60
atgaaggttc tgtgggctgc gttgctggtc acattcctgg caggatgcca ggccaaggtg 120
gagcaagcgg tggagacaga gccggagccc gagctgcgcc agcagaccga gtggcagagc 180
ggccagcgct gggaactggc actgggtcgc ttttgggatt acctgcgctg ggtgcagaca 240
ctgtctgagc aggtgcagga ggagctgctc agctcccagg tcacccagga actgagggcg 300
ctgatggacg agaccatgaa ggagttgaag gcctacaaat cggaactgga ggaacaactg 360
accccggtgg cggaggagac gcgggcacgg ctgtccaagg agctgcaggc ggcgcaggcc 420
eggetgggeg eggaeatgga ggaegtgtge ggeegeetgg tgeagtaceg eggegaggtg 480
aagctgcgta agcggctcct ccgcgatgcc gatgacctgc agaagtgcct ggcagtgtac 600
caggeegggg eeegegaggg egeegagege ggeeteageg eeateegega gegeetgggg 660
cccctggtgg aacagggccg cgtgcgggcc gccactgtgg gctccctggc cggccagccg 720
ctacaggage gggcccagge ctggggcgag cggctgcgcg cgcggatgga ggagatgggc 780
agccggaccc gcgaccgcct ggacgaggtg aaggagcagg tggcggaggt gcgcgccaag 840
ctggaggagc aggcccagca gatacgcctg caggccgagg ccttccaggc ccgcctcaag 900
agctggttcg agcccctggt ggaagacatg cagcgccagt gggccgggct ggtggagaag 960
gtgcaggctg ccgtgggcac cagcgccgcc cctgtgccca gcgacaatca ctgaacgccg 1020
aagectgeag ceatgegace ceaegecace eegtgeetee tgeeteegeg eagectgeag 1080
cgggagaccc tgtccccgcc ccagccgtcc tcctggggtg gaccctagtt taataaagat 1140
tcaccaagtt tcacgc
                                                                 1156
<210> 11
<211> 1156
<212> DNA
<213> Homo sapiens
```

```
<400> 11
cgcagcggag gtgaaggacg tccttcccca ggagccgact ggccaatcac aggcaggaag 60
atgaaggttc tgtgggctgc gttgctggtc acattcctgg caggatgcca ggccaaggtg 120
gagcaagegg tggagacaga geeggageee gagetgegee ageagaeega gtggeagage 180
ggccagcgct gggaactggc actgggtcgc ttttgggatt acctgcgctg ggtgcagaca 240
ctgtctgagc aggtgcagga ggagctgctc agctcccagg tcacccagga actgagggcg 300
ctgatggacg agaccatgaa ggagttgaag gcctacaaat cggaactgga ggaacaactg 360
accccggtgg cggaggagac gcgggcacgg ctgtccaagg agctgcaggc ggcgcaggcc 420
eggetgggeg eggacatgga ggacgtgtge ggeegeetgg tgeagtaceg eggegaggtg 480
caggccatgc teggccagag cacegaggag etgegggtge geetegeete ceaeetgege 540
aagctgtgta agcggctcct ccgcgatgcc gatgacctgc agaagcgcct ggcagtgtac 600
caggccgggg cccgcgaggg cgccgagcgc ggcctcagcg ccatccgcga gcqcctqqqq 660
cccctggtgg aacagggccg cgtgcgggcc gccactgtgg gctccctggc cggccagccg 720
ctacaggage gggcccagge ctggggcgag cggctgcgcg cgcggatgga ggagatgggc 780
agccggaccc gcgaccgcct ggacgaggtg aaggagcagg tggcggaggt gcgcgccaag 840
ctggaggagc aggcccagca gatacgcctg caggccgagg ccttccaggc ccgcctcaag 900
agctggttcg agcccctggt ggaagacatg cagcgccagt gggccgggct ggtggagaag 960
gtgcaggctg ccgtgggcac cagcgccgcc cctgtgccca gcgacaatca ctgaacgccg 1020
aageetgeag ecatgegace ceaegecace eegtgeetee tgeeteegeg eageetgeag 1080
cgggagaccc tgtccccgcc ccagccgtcc tcctggggtg gaccctagtt taataaagat 1140
tcaccaagtt tcacgc
                                                                  1156
<210> 12
<211> 1156
<212> DNA
<213> Homo sapiens
<400> 12
cgcagcggag gtgaaggacg teetteecca ggagccgact ggccaatcac aggcaggaag 60
atgaaggttc tgtgggctgc gttgctggtc acattcctgg caggatgcca ggccaaggtg 120
gagcaagcgg tggagacaga gccggagccc gagctgcgcc agcagaccga gtggcagagc 180
ggccagcgct gggaactggc actgggtcgc ttttgggatt acctgcgctg ggtgcagaca 240
ctgtctgagc aggtgcagga ggagctgctc agctcccagg tcacccagga actgagggcg 300
ctgatggacg agaccatgaa ggagttgaag gcctacaaat cggaactgga ggaacaactg 360
accocggtgg cggaggagac gcgggcacgg ctgtccaagg agctgcaggc ggcgcaggcc 420
eggetgggeg eggaeatgga ggaegtgtge ggeegeetgg tgeagtaeeg eggegaggtg 480
caggccatgc teggecagag cacegaggag etgegggtgc geetegeete ceaeetgege 540
aagctgcgtc agcggctcct ccgcgatgcc gatgacctgc agaagcgcct ggcagtgtac 600
caggeegggg ceegegaggg egeegagege ggeeteageg ceateegega gegeetgggg 660
cccctggtgg aacagggccg cgtgcgggcc gccactgtgg gctccctggc cggccaqccg 720
ctacaggage gggcccagge etggggegag eggetgegeg egeggatgga ggagatggge 780
agccggaccc gcgaccgcct ggacgaggtg aaggagcagg tggcggaggt gcgcgccaag 840
ctggaggagc aggcccagca gatacgcctg caggccgagg ccttccaggc ccgcctcaag 900
agetggtteg ageceetggt ggaagacatg cagegecagt gggeeggget ggtggagaag 960
gtgcaggctg ccgtgggcac cagcgccgcc cctgtgccca gcgacaatca ctgaacgccg 1020
aagcctgcag ccatgcgacc ccacgccacc ccgtgcctcc tgcctccgcg cagcctgcag 1080
cgggagaccc tgtccccgcc ccagccgtcc tcctggggtg gaccctagtt taataaagat 1140
tcaccaagtt tcacgc
                                                                   1156
<210> 13
<211> 18
<212> PRT
<213> Homo sapiens
<400> 13
Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys
1
Gln Ala
```

```
<210> 14
<211> 317
<212> PRT
<213> Homo sapiens
<400> 14
Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys
Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu
Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu
Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln
Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala
                    70
                                         75
Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu
                                    90
Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser
                                105
                                                     110
Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp
                            120
                                                 125
Val Arg Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu
                        135
                                            140
Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg
                    150
                                        155
Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg
                165
                                    170
Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu
            180
                                185
Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val
                            200
Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg
                        215
                                            220
Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly
                    230
                                        235
Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu
                245
                                    250
Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala
            260
                                265
Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu
                            280
Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala
                        295
Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His
                    310
<210> 15
<211> 317
<212> PRT
<213> Homo sapiens
<400> 15
Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys
                                    10
Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu
```

25

20

34

```
Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu
Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln
Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala
                    70
                                        75
Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu
                85
                                    90
Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser
            100
                                105
Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp
        115
                            120
Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu
   130
                        135
Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg
                    150
Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg
                165
                                    170
Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu
            180
                                185
Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val
        195
                            200
Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg
                        215
Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly
                    230
                                        235
Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu
                245
                                    250
Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala
            260
                                265
Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu
                            280
Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala
                        295
Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His
                    310
```

<210> 16 <211> 317 <212> PRT <213> Homo sapiens

 <400> 16

 Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys 1
 5
 10
 15

 Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu 20
 25
 30

 Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu 35
 40
 45

 Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln 50
 55
 60

 Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala 65
 70
 75

 Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu 85
 90
 95

 Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser 100
 105
 110

 Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp
 100

```
120
Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu
    130
                        135
                                            140
Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg
                    150
                                        155
Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Cys
                165
                                    170
Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu
            180
                                185
Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val
                            200
Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg
    210
                        215
Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly
                    230
                                        235
Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu
                245
                                    250
Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala
                                265
Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu
                            280
Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala
                        295
Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His
                    310
```

<210> 17 <211> 317 <212> PRT

<213> Homo sapiens

<400> 17 Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys 10 Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala 70 Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu 90 Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser 105 Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp 120 125 Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu 135 140 Asp Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg 150 155 Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Cys 165 170 175 Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu 180 185 190 Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val 200

Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg 215 220 Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly 230 235 Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu 245 250 Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala 265 260 Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu 280 285 Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala 295 300 Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His 310 315

<210> 18 <211> 317 <212> PRT

<213> Homo sapiens

<400> 18 Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys 10 Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu 20 Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln 55 Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala 70 Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu 90 Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser 105 Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp 120 125 Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu 135 140 Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg 150 155 Lys Leu Cys Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg 165 170 Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu 180 185 Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val 200 Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg 215 Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly 230 235 Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu 245 250 Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala 260 265 Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu 280 Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala

```
Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His
                    310
<210> 19
<211> 317
<212> PRT
<213> Homo sapiens
<400> 19
Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys
Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu
Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu
Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln
Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala
                    70
Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu
                                    90
Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser
                                105
Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp
                            120
Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu
                        135
Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg
                    150
                                        155
Lys Leu Arg Gln Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg
                165
                                    170
Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu
            180
                                185
Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val
                            200
Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg
                        215
Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly
                    230
                                        235
Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu
                245
                                    250
Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala
            260
                                265
Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu
                            280
Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala
                        295
Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His
                    310
```

295

```
<210> 20
<211> 24
<212> DNA
```

<213> Artificial Sequence

<220>

<223> Synthetic Primer	
<400> 20 gctgggtgca gacactgtct gagc	24
<210> 21 <211> 25 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic Primer	
<400> 21 cgcagccgct cgccccagca ggcct	25
<210> 22 <211> 24 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic Primer	
<400> 22 cccctggtgt aacagggccg cgtg	24
<210> 23 <211> 24 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic Primer	
<400> 23 geggeeetgt tacaccaggg geee	24
<210> 24 <211> 21 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic Primer	
<400> 24 ggccagccgt gacaggagcg g	21
<210> 25 <211> 21 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic Primer	
<400> 25 ccgctcctgt cacggctggc c	21

i**i**

<210> 26	
<211> 23 (212> DNA)	
<213> Artificial Sequence	
, , , , , , , , , , , , , , , , , , ,	
<220>	
<223> Synthetic Primer	
4400> 26	
<400> 26 cgaccgcctg taagaggtga agg	23
egacegeeeg caagaggega agg	23
<210> 27	
<211> 23	
<212> DNA	,
<213> Artificial Sequence	
<220>	
<223> Synthetic Primer	
-	
<400> 27	
ccttcacctc ttactggtga agg	23
<210> 28	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Synthetic Primer	
<400> 28	
attccaggcc taactcaaga gct	23
<210> 29	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Synthetic Primer	
<400> 29	
agctcttgag ttaggcctgg aat	23